The Integration of Microcomputers into Small Accounting Firms

An Honors Thesis (ID 499)

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The Integration of Microcomputers into Small Accounting Firms

"Remember the bookkeeper
Perched on his stool,
Green eyeshade tilted,
Quill for a tool?
He wasn't too fast,
But nowhere in town
Did you hear the excuse
Our computer is down."\(^1\)

The ideas expressed in this humorous poem attest to the evolution of the accounting profession. As suggested in the verse, few are reluctant to dispel the image of the bookkeeper hunched in the corner poring over journals and ledgers. Today accountants are recognized as highly respected and visible participants in the business community.

The second half of the rhyme comments on the newest phase of accounting, the introduction and integration of microcomputers into the offices of accounting firms. Particularly in relation to their effects on small firms, the issues of the history, advantages, options and applications of microcomputers will be addressed. Any doubts or disadvantages of microcomputers, such as those suggested in the poem, will also be noted.

The use of computers to process various business information is not a new idea. Large mainframe units introduced in the early 1960's offered significant features for improving productivity. However, the high maintenance costs and the need for experienced personnel was often prohibitive to small businesses. The newest dimension in
electronic information processing, the microcomputer, has overcome these limitations and has come into its own either as a separate unit or in conjunction with the mainframe. While offering nearly the same computing capabilities as earlier mainframes, the microcomputers are smaller, faster, cheaper, and more user-friendly. As a result of these obvious advantages, microcomputer sales have approached nearly two million units per year.

Current Frequency of Microcomputer Use

Currently, business uses, as opposed to the home or hobbyist market, account for the majority of these sales. In answer to a questionnaire by the National Association of Accountants, approximately 60 percent responded that they utilize a microcomputer. Over half indicated that they plan to purchase either a first or additional microcomputer within two years. In order to investigate the popularity of various types of microcomputers within the Indianapolis area, a survey was conducted by Price Waterhouse and the Indianapolis Business Journal. Their results revealed that 74 percent of companies responding owned either the IBM, Apple or Radio Shack model. Functions performed include basic to complex financial analyses, word processing, spreadsheet applications and graphics.

The Indianapolis survey also sought to gather information on the advantages realized by the use of microcomputers. At least one substantial benefit was received by at least 96 percent of the respondents including improved productivity, increased timeliness of information, and greater accuracy. However, 82 percent indicated that at least one significant problem was encountered. The difficulties noted included insufficient training of personnel, lack of integration
with the company's mainframe computer system, and limited availability of satisfactory software. 5

In accounting as in other types of businesses, the introduction of microcomputers has made technology, that was previously not cost feasible, available to smaller firms. In assessing the impact, the AICPA's Special Committee on Small and Medium Sized Firms stated that "the destiny of each firm will be determined by its ability to compete and adapt to the times." 6 Recognizing the fact that an accounting firm can increase revenues in only a few ways such as building the client base, expanding services to present clients or a combination of these two, some accountants are utilizing microcomputers to accomplish these goals. 7 However, firms who integrate microcomputers into their practices experience many of the same risks and rewards as other business users.

**Microcomputer Feasibility**

Microcomputers have been credited as a factor in perfecting the accounting firm. 8 This should not, however, be interpreted as a definitive statement for all accounting practitioners. The determination that must be made by each firm considering automation is whether or not the benefits to be derived outweigh the costs to be expended. This decision requires an understanding of the particular needs of the firm, the alternatives to computerization, the components of a successful microcomputer unit, and the effective applications of the system. Only after this complete review can a firm determine how and when to implement personal computers.

The first step required is an analysis, or feasibility study, of a microcomputer system in relation to the individual firm. 9 In compiling this information, the accountant may consider such questions as:
• What services are presently provided to clients?
• How do the billings from these services contribute proportionately to the total revenue of the firm?
• Could the efficiency of present services be improved by computerization?
• What new services could be added?
• Could new clients be gained by the addition of these services?
• How much could each new service contribute?

Also, a list of features required for each alternative use should be prepared. Appendix A represents a systematic form which may be used for this cost-volume-profit analysis.

The conclusion of this feasibility study should result in the formation of specifications for possible automation. By defining the requirements for the system the accountant attempts to ensure the selection of a system that will perform as expected. For better understanding, these specifications can be subdivided into six separate categories including: general requirements, data and file requirements, input requirements, output requirements, processing requirements, and hardware requirements.¹⁰

**General System Specifications**

The general requirements include several factors. First, upon completion of the study, the microcomputer proposal should be cost effective at varying levels of volume. Second, consideration should be given to the result of computerization on turnaround time, the time between receipt of the information and completion of services. A number of firms have discovered the reduction in turnaround time to be a significant factor in effective use of their microcomputer. For
example, in describing the automation of his small firm, Mr. Patrick Callero explains that the use of a microcomputer has allowed the firm to do statement compilations on a quarterly basis as opposed to semi-annually. This allows the accountants to quickly identify specific problem areas for the client.  

A third general requirement is the desire for system flexibility. This is defined as how well the system can be adapted to the specific needs of the individual firm. The fourth consideration is the ease of use of the system including the relative difficulty of converting the information supplied into the desired results.  

**Alternatives to Microcomputers**

Before continuing with an indepth study of the other categories of systems specifications, it is appropriate to investigate other automation options available without the purchase of in-house computer system. These possible alternatives include batch processing service centers and timesharing services. Service centers provide processing for generalized accounting applications. Information is provided on forms supplied by the service, and the arrangement of the output reports are also specified by the service bureau. Evaluating this option under the general systems guidelines discloses that turn-around time under this plan averages one week. Also, providing and receiving information in the format of the service bureau limits the relative flexibility. Cost under this arrangement is usually based on volume processed. Despite the limitations of this system, the avoidance of the costs and responsibilities of a computer system seem appealing. In a study of New York practitioners, 90 percent of whom consisted of firms with less than five partners, it was discovered
that 66 percent utilized some form of electronic data processing. The majority of these firms use service bureaus. 16

The second option available is the utilization of timesharing services. Under this arrangement, the firm has on its premises a device that makes a connection, usually via telephone, with the main-frame computer of the company supplying the service. The work is usually done at night with charges being made based on the amount of computer time used. Turnaround has been found to be almost immediate under this timesharing system. 17

Obviously, alternatives to an in-house computer system exist and are being utilized. However, when these options are not available in a particular firm's area or when the services do not meet the accountant's need, a microcomputer system becomes a feasible form of automation. Selection of a particular system should then be based on the consideration of the other five categories of specifications.

**Microcomputer Software**

Software requirements is a general term used to describe the next four specification categories. Software is defined as all written programs which describe a series of instructions designed to communicate to the computer how to perform a task. This is what enables the computers to perform the objectives for which it was purchased. The actual computer machinery is known as hardware. While the software and hardware must be compatible, it is preferable to select the software that will perform the desired functions. A computer that can handle the selected software is then chosen.
Software Specifications:

Data and file requirements refer to the desired format of the information that will be stored, retrieved, and processed by the software program. Input requirements specify the form in which the information is entered into the computer system. The desired report formats will be included under the output requirements. Specifications for how the input data will be converted to output data are incorporated in the processing requirements. These may include any error detection that the firm wants to occur.\(^\text{18}\)

Software Options:

While software costs have decreased substantially, its purchase still requires a great amount of consideration. One decision that must be made is whether to buy packaged software or to have specially prepared user written software created. Packaged software is readily available from a number of companies. Each of these businesses may specialize in a particular type of software. For example, Creative Solutions, Inc. designs packages specifically for client write-up work. Aardvark, Inc., on the other hand, is known for tax preparation software. If the firm chooses pre-written software, care must be taken to meet the specific input, output and processing requirements.

Some firms, however, choose to have custom software written to meet their particular needs. This option is also possible if good packaged software is not available. In many cases, the cost of this service is prohibitive to the firm.\(^\text{19}\)

Electronic spreadsheets are a form of generalized software that can be used by the firm to create their own programs. First introduced in 1978 under the tradename, Visicalc, spreadsheets consist
of rows and columns that can be formulated to represent financial work-
sheets. The intersection of each row and column creates a box into
which can be entered either words, figures or algebraic expressions.
This model of relationships is called a template, and it is specifically
tailored by the user. This allows for complete financial statements
to be formatted in a manner similar to those on a worksheet. All inter-
related figures can then be adjusted by the alteration of different
numbers in other boxes on the spreadsheet. Other popular uses are in
forecasting situations and in "what if" problem solving cases.20

It should be noted that some hardware systems come with
"free" software. As expected, the cost of the software is usually
incorporated into the purchase price. This method of acquisition is
not recommended. As discussed before, it is more efficient to select
software based on specifications and then choose compatible hardware.21

Software Selection Criteria:

Regardless of the type of software acquired, certain criteria
should be met in order to insure a suitable purchase. Aside from
meeting the needs of the firm, the programs should be of acceptable
quality. This includes the ability to operate efficiently. Demon-
strations of potential purchases are an effective method for deter-
минing this. Also, by reviewing the supplier's standards for quality
against the firm's specifications, the practitioner can make this
evaluation.22

An important factor in judging the quality of the software
is the type of documentation provided. For example, software should
identify the purpose of the program and also the computing process.
Flowcharting has been found to be an effective means of describing the
software's tasks. The clarity of the software will be increased if variable names are meaningful. For example, if the purpose of a program is to calculate interest, it is more desirable to use the term "interest" as the variable representing the amount. This is much easier for the programmer to understand than variable names such as "i." Also, a list of such variables utilized in the program should be included at the beginning. Since many programs are interactive with the user, prompting messages should be self-explanatory. Most importantly, instructions for running the program are essential. These should include: proper uses for the software, hardware requirements, listing of commands needed by the user, necessary format for inputed data and procedures for handling output. Documentation that is nontechnical and easily understood will meet the requirements for being user friendly.

The last criteria for software evaluation is the quality of the supplier. This includes such factors as the vendor's financial strength, company history, and area of specialization. It is advisable to select a supplier who has demonstrated a familiarity with the field of accounting. Often the best evaluation of the vendor's quality is his reputation. Costly mistakes can sometimes be avoided by discussing purchase plans with others who have dealt with the software company. Trade journals and publications also frequently evaluate software packages.

**Microcomputer Hardware**

As stated earlier, hardware requirements will be based in part on selecting a machine compatible with appropriate software. Other factors to be considered are the individual characteristics of the available hardware. Basically the system can be divided into three
sections. Input/Output equipment describes the components used to enter data into the system and to receive the results. A common input device is the cathode ray tube (CRT), which resembles a television screen, used in conjunction with a keyboard unit. Besides displaying program instructions and data input, the CRT can also be used for output. More commonly, however, a printer is used in conjunction with the CRT in order to produce a hard copy of the output.25

The second component of the hardware system is the central processing unit (CPU) which is composed of the control unit, the arithmetic/logic unit, and the primary memory. The most critical factor from the purchaser's viewpoint is the memory space. Limited memory can severely limit the use of software because all programs require a minimum amount of space during processing.26

Storage and retrieval equipment is the final component of the hardware unit. Several options exist, but the most recommended is the floppy disk. Formed of plastic and about eight inches in diameter, information is stored on one side of the disk.27

Approximately the size of an office typewriter, the approximate cost of a microcomputer hardware system is $5000. This price includes the central processing unit with a memory capacity of 64000 bytes; two disk drives used to read from and print to the floppy disks; a CRT; and a printer for hard copy output. The quoted figure also includes an acoustic coupler used to send signals via telephone.28 Appendix B provides an overview of the microcomputer hardware market.

Regardless of the hardware model installed, the manufacturer-guaranteed service and support of the system is essential because, in smaller firms, it is unlikely that any of the staff will be computer experts. While it is true that microcomputers are a highly advanced
form of technology, they are not free from the malfunctions that make good service important. As one businessman said, "If you don't do business with someone you can call on when you have a problem, you're in trouble because your computer is going to be worthless most of the time." 

While it is not expected that firm personnel become computer experts, the staff should upgrade their knowledge to allow for comfortable use of the computer. The best method for this is usually a training program. However, it is often best to avoid classes on programming specifics and large scale systems' topics. Courses that build skills in actual applications and computer literacy are most useful. "Hands on" experience is an essential supplement to training programs. Overcoming "micro-phobia" through actual use of the microcomputers also aid in acceptance by the staff of the new equipment. Recognizing the need for an adjustment period, some manufacturers provide games to be played on the computer before the software arrives to assist in the familiarization process. Numerous journals relating specifically to the microcomputer area are also available to broaden the knowledge learned in class. Appendix C provides a list of popular magazines concerned with personal computers.

**Microcomputer Applications**

During analysis of the firm's particular needs and investigation of available software, the practitioner will discover a wide variety of possible microcomputer applications. The most popular software for basic accounting functions is the general ledger package. This software is used to process accounting information for small clients who lack the need for an in-house department.
Computer-Prepared Statements:

In selecting the appropriate system, the accountant should select one that conforms to "standard" bookkeeping while preserving the flexibility necessary for a variety of clients. For example, rather than using a general journal only, some clients may wish to maintain separate transaction files for cash, disbursements, sales and purchases. One typical package, selling for about $750, contains a 250-account chart of accounts. This chart is, although limited, variable enough to be adapted for most small businesses. This package allows the accountant to process about 2,500 transactions per client per month. Normally, information of update transactions is summarized on data input sheets for entry into the computer. Time can be saved, however, if the accountant notes the correct account number on the source document, and it is used as the input data.

Many firms have found it advantageous to train clerical personnel to perform this posting function on the computer. One firm noted that although their nonprofessional staff people were not trained to update the ledger manually, each could post approximately thirty-five general ledgers per month on the computer. Normal procedure after entry of the data is to reprint the information on the screen to check for errors. If any exist, they can be corrected and the entry reposted. The final, corrected report should be reviewed by the accountants.

Following the posting of all transactions, financial statements can be prepared by the write-up software incorporated into the general ledger package. For example, the system of Creative Solutions, Inc. offers a selection of twenty-four various reports that can be
produced including: trial balance; current year versus prior year balance sheets; current and year-to-date income statements; and statements of changes in financial position. This software also has the capacity to prepare consolidated and multid部mental financial statements. As noted previously, this method of computer compilation makes it feasible for firms to deliver more timely interim and year-end financial analyses.

Issues Concerning Computer-Prepared Statements:

The ease with which statements can be computer prepared in comparison to manual preparation presents problems meeting the requirements of Statements on Standards for Accounting and Review Services no. 1, "Compilation and Review of Financial Services." Interim statements, prepared on the accounting firm's microcomputer for management's use, are often formulated without consideration of accruals and adjustments that may be necessary. Firms argue that, although it is not effective in terms of cost and time to make the adjustments, management recognizes the limitations of the statements and still finds them useful.

Recognizing that the current problem will grow as more firms acquire computers, the AICPA Accounting and Review Service Committee (ARSC) considered three alternative solutions. First, it was suggested that the committee reemphasize that SSARS no. 1 applies to all financial statements compiled for nonpublic companies regardless of the method of preparation. This position was defended on the grounds that SSARS no. 1 expressed currently accepted standards. However, opponents of this idea noted that it was the responsibility of rule-setting organizations to recognize and respond to new developments, such as the cost-benefit advantage of computer prepared statements.
The second suggested alternative for computer prepared statements would be to require a third paragraph in the standard compilation report regarding the lack of certain adjustments or disclosures. Following is a sample of the type of paragraph that might be included.

"Management has elected to omit substantially all of the disclosures and statement of changes in financial position required by generally accepted accounting principles. In addition, all necessary accounting adjustments may not have been made. Because the pervasiveness of the matters discussed above make it difficult to assess their impact on the financial statements, users of these financial statements should recognize that they might reach different conclusions about the company's financial position, results of operations and changes in financial position if they had access to revised financial statements prepared in conformity with generally accepted accounting principles."38

The suggestion of this alternative, however, leaves many accountants wondering why they should comply with accepted compilation requirements, such as reporting any deficiencies detected in the information supplied by the client. In light of the use of this special disclaimer paragraph, it would not be necessary to take the additional steps to comply with the additional requirements.

The final suggestion is the use of a legend on each page of the financial statements. This, in effect, would allow accountants to provide a service distinct from a compilation, review or audit. In order to clarify to the reader the nature of the report and the extent of the accountant's involvement, the legend might read as follows:

"These interim financial statements were computer prepared along with the processing of the company's basic accounting data and do not purport to reflect all appropriate adjustments and disclosures. They were not compiled, reviewed, or audited by a (certified) public accountant."39

This third alternative, the legend approach, was selected by the ARSC as the most effective. In an exposure draft, entitled
Computer-Prepared Interim Financial Statements, it was suggested to amend SSARS no. 1 to allow computer prepared interim financial statements bearing the legend to be issued as a generally accepted accounting principle. However, certain additional constraints were imposed. In order to avoid dispute, it was recommended that the firm and the client have an agreement of the services to be performed, preferably in written form. Also, no portion of the report could refer to the accountant, and finally, the period covered by the information in the financial statements had to be less than one fiscal year.

The response to this controversial exposure draft was overwhelming during the comment period running from June 15 to September 15, 1982. In light of the draft's impact on the services provided by smaller firms, the ARSC members were particularly pleased by the number of responses from this group. Out of 797 comment letters from those in public practice, a total of 719 came from firms with 20 or less professional staff. However, the majority of respondents, 53 percent, were against the exposure draft. The remainder of respondents were divided 37.5 percent for the draft and 9.5 percent undecided. Appendix D gives a complete summary of responses and frequent comments.

Following an in-depth review of the comments received, the exposure draft was withdrawn. Therefore, the accountant who submits financial statements to clients, whether computer or manually prepared, must comply with SSARS no. 1. To continue efficient use of the microcomputer, the accountant may use the available information to prepare reports that, while assisting clients in making timely business decisions, do not fall under SSARS no. 1, such as account balance analyses. In all cases, it is best to discuss with the client how best to serve
his needs, while at the same time, meeting the professional obligations of the accountant.

Accounting Applications:

Some of these other client requested accounting services can be efficiently performed on the firm's microcomputer. Preparation of depreciation and amortization schedules are two examples of effective computer uses. Some firms have also found it profitable to process accounts receivable and accounts payable records for their clients. Using software packages to perform updates and to formulate analyses of these records, this service provides balanced usage throughout the month of the firm's computer. The accountant, however, must ensure that performance of these functions does not interfere with his independence in other services, such as audits.

Management Advisory Applications:

Closely related to the performance of the client's accounting functions, some firms are utilizing their microcomputers as aids in management advisory services.

One area deals not with specific application of the microcomputer capabilities, but with the knowledge that the accountant gains through the investigation, purchase, and operation of his system. As noted previously, the use of microcomputers is rapidly expanding, particularly in small businesses. Many businessmen welcome the advice of someone who knows the needs of their individual business and can help them sort their way through the maze of computer options. For this service, clients are looking to their accounting practitioners.

Installation of an in-house computer system is one step involved in developing the skills needed to provide this service. As
the motto of the Army Finance School says, "learn to do by doing." In addition, however, the firm must build a base of computer knowledge. In order to deal efficiently with computer vendors, the accountant should understand the technology of the computer field and the jargon associated with it. This, also, alleviates an intimidation the practitioner may have in relation to computers. Naturally, the accountant should have some knowledge of available hardware equipment and software products. This does not mean that the practitioner needs a complete understanding of the hardware system, rather he should be familiar with the abilities and limitations of various components. Packaged accounting software is usually most efficient for small businesses.

Another popular application is financial forecasting to assist clients in making effective business decisions. These might include investment analyses, retail inventory analyses, or cash flow analyses. In formulating these budgets, situation models, and proformance statements, electronic spreadsheets are helpful because they allow the operator to see the bottom line results of various figure adjustments.

"What if" questions are also frequently asked in tax planning. Aside from electronic spreadsheets, specialized tax modeling software is available to perform these analyses. Often this software is interactive allowing the accountant to test different strategies in order to minimize tax liability now and in future years.

Tax Applications:

The most popular tax application, however, is preparation of returns. Typical tax software allows the accountant to enter the data on an interactive basis, and the computer produces facsimiles of Internal Revenue Service forms. This software, costing usually less
than $200, is designed to handle all schedules and most forms used by the IRS. The efficiency of the system is demonstrated by one firm's experience. According to Mr. Thomas DePaola of DePaola, Begg and Associates, P.C., "We have 200 clients whose fiscal year ends in December and whose tax returns are due in March. We asked for only 10 to 15 IRS extensions last year, and would have asked for none had these clients delivered the required information to us on time." This makes it apparent why a practitioner who does a great amount of tax work can justify paying the cost of a microcomputer system simply for use in tax preparation.

Audit Applications:

Until recently, the application of microcomputers for auditing purposes was not popular due to the need for staff members who were highly knowledgeable in the area of computers. This skill was essential to enable the accountant to sufficiently understand and adapt to the client's system. However, current advances in microcomputer software now enable the duplication of functions previously only available in large mainframe programs. This generalized software has created a powerful auditing tool even for accountants with only basic computer skills.

The tasks performed by these software packages can be divided into three classes of capabilities including statistical work, simulations and generation of test data. The most popular statistical application is the use of the microcomputer to formulate sample size based on population size, precision and confidence levels selected by the auditor. Selection of the sample using random number generators occurs after the parameters are determined.
The second class of capabilities relates to the simulation of the client's software. By recreating the client's program on the accounting firm's computer, the accountant is able to "walk through" the processes. This tests whether transactions are being properly handled. The third class of capabilities performs a function used in an auditing alternative to simulation. In this method, the client's actual software is used rather than a simulated version. This test requires the use of "dummy" records known as a "test deck" which is created by the accounting firm's computer. 49

Firm Management Applications:

The microcomputer can also be used to strengthen internal firm management to allow the firm to grow and operate efficiently. The first application is staff scheduling, matching personnel resources to available jobs. One firm utilizes their in-house computer to forecast future periods when staff members will not have enough work to meet their capacity. At these times, the firm submits lower than normal bids on government work in order to make the time productive. 50 Closely related is using the computer for client billings. At times, staff members are reluctant to bill time to clients perhaps feeling that it is unwarranted. However, a system combining billing with scheduling can reduce this lost chargable time to a minimum. Some firms have found that computerized billing and receivable have resulted in as much as a 50 percent decrease in work in process and accounts receivable. 51

A third management application is utilizing billing and receivable information to perform client profitability analyses. This allows the firm to evaluate the present services provided and to eliminate
clients that prevent the firm from realizing its full potential.

One firm finds this practice particularly useful prior to the consideration of new staff additions. Obviously, however helpful the computer may be, it is the ultimate decision of the partners as to which clients should be pruned. Weight should be given to other non-numeric factors such as the possible growth of the client and the need for an extension of services.

Other management applications include computerized payroll and word processing. While payroll is a labor intensive task regardless of the system used, a microcomputer is usually the most efficient system for a staff of approximately 15 to 40 employees. One of the major advantages is having the payroll information accessible at quarter and year ends.

All types of businesses, accounting firms included, have experienced the benefits of word processing software. For as little as $300-$400, a microcomputer can be adapted to simplify repetitive typing tasks such as form letters, standard reports and memos. Some firms have also found it helpful to produce client information newsletters. The main advantage of a word processor is that frequently used sentences or paragraphs can be arranged into the desired document and then printed. Information relating to the specific incident is also easily inserted. Practice management applications as previously detailed can assist an accounting practice into becoming a successful accounting business.

As can be seen, the introduction of microcomputers into accounting firms of all sizes seems inevitable. In the near future, all practitioners will be faced with the decision of whether to commit
time and resources to the integration of a computer or to continue to practice as usual. While questions may exist as to the dependability, advantages, options, and application of microcomputers, it is hoped that these topics have been sufficiently clarified to provide a basis for a reasonable decision regarding a firm's course. Undoubtedly, this issue is particularly important for small accounting firms for whom it is essential to maintain the competitive edge. As expressed in an article on this subject,

"If the small practitioner begins to plan for computerization now, the rewards in term of practice protection and expansion opportunities seem real. Those small practitioners who delay implementation of a plan may risk a loss of a significant portion of their client base to more aggressive practitioners in the near future."
Footnotes


5. Ibid., p. 58.


12. Louvau and Jackson, p. 15.


14. Louvau and Jackson, p. 16.

15. Ibid., p. 12.


22. Ibid.

23. Wragge, p. 46.


26. Ibid., p. 34.

27. Ibid., p. 46.

28. Wynne, p. 35.

29. Callero, p. 32.

30. Campbell, p. 32.

31. Callero, p. 34.


33. Wynne, p. 38.

34. Callero, p. 34.


37. Ibid.

38. Ibid., p. 93.

39. Ibid., p. 93

40. Ibid.

41. Ibid., p. 94.

43 Ibid., p. 40.

44 Ibid., p. 40.

45 Needleman, p. 129.

46 Ibid., p. 119.

47 Wynne, p. 38.


49 Needleman, p. 140.

50 Brock, p. 39.

51 Ibid., p. 41.

52 Ibid.

53 Needleman, p. 116.

54 Ibid., p. 117.

55 Campbell, p. 33.
Bibliography


Appendix A:

Cost-Volume-Profit Analysis

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<th>Application</th>
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Total Annual Contributions $XXX
Less Annual Allocation of Hardware System Costs $XXX
Net Annual Contribution $XXX

*Annual contributions will be more subjective in relation to firm management applications.
Appendix B:

An Overview of the Microcomputer Marketplace

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<th>Vendor</th>
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Author's note: Most of the information included in this exhibit is from Datapro Directory of Small Computers (2 vols. (Delran, N.J.: Datapro Research Corporation, a McGraw-Hill Company, 1980)). Because of the rapid changes taking place in the microcomputer marketplace, readers should contact individual computer vendors for the most accurate and up-to-date information. This exhibit covers only a portion of the small-computer industry and is not an endorsement of any product.

*CP/M available.
†VisiCalc available.

1Memory—minimum and maximum system memory sizes. The larger the memory size, the more sophisticated applications the computer can support.
The least amount of memory for processing business applications should be 48,000 bytes but 64,000 bytes would be more desirable. An important point to remember is that the operating system of the computer usually takes up a significant portion of the memory. For example, an Apple II Plus computer with 48,000 bytes of random-access memory uses approximately 10,000 bytes of memory for the operating system. The amount of useful memory is therefore less than the system specifications indicate.

Languages supported by the system—B=BASIC; C=COBOL; F=FORTRAN; P=Pascal; D=DIMOL; H=HIBOL; L=PL/1; T=TPL. It is important to realize that not all similar languages will run on different systems. For example, Apple BASIC will not execute on a TRS-80 machine without modification, albeit minor. Also, if a firm selects a system with a unique language, a problem may occur if at some time the firm plans to change vendors.

**Intertec says its model "gears itself to large-volume end users" such as larger businesses and hospitals.**

Price—An approximate list price of a minimum system configuration including a printer and floppy-disk system.

Appendix C:

Magazines Concerned with Personal Computing

<table>
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<tr>
<th>Magazine</th>
<th>Category</th>
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<tr>
<td>BYTE</td>
<td>Microcomputing</td>
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<td>CALL-APPLE</td>
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<td>Dr. Dobb's Journal</td>
<td>Popular Computing</td>
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<td>Infoworld</td>
<td>Softside</td>
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Appendix D:

Summary of the Responses to the Exposure Draft

<table>
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<th>Overall Response</th>
<th>Number of Respondents</th>
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<tr>
<td>For*</td>
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<tr>
<td>Against</td>
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<td>53.0</td>
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<tr>
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<td><strong>848</strong></td>
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</table>

Major Categories of Comments

1. The exposure draft describes an unprofessional service. 305
2. There should be no distinction between computer-prepared and manually prepared financial statements. 238
3. The accountant should sign the report. 117
4. This represents a step backward to "plain-paper" and "internal-use-only" financial statements. 108
5. The legend is impractical for use with computer-prepared financial statements. 91
6. The service shouldn't be restricted only to interim financial statements. 71
7. The SSARS no. 1 three-paragraph compilation report should be used for these engagements. 60
8. Change (or condense) the wording of the legend. (Most suggested alternative wording.) 56

*Represents support for some form of exemption from SSARS no. 1, not necessarily the approach taken in the exposure draft.
†Totals to more than number of respondents due to duplicate comments.